

him. In his death America lost one of its most careful and accomplished conchologists.

The bibliography which will appear in the next number of NAUTILUS, while possibly incomplete, shows the extent and value of his services. I trust it may prove of use to searchers for his writings.

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### SOME CONCHOLOGICAL BEGINNINGS

BY CALVIN GOODRICH

One cannot do the necessarily repeated readings of early descriptions of fresh water mollusks in America without coming to wonder what manner of men did the original collecting, the circumstances of this collecting and, sometimes, where exactly the collections were made. Gradually, one picks up a certain amount of dependable information on the subject. A realization develops of how exceedingly restricted were the means of travel in the first fifty or sixty years of the Nineteenth Century. Customs that are now almost forgotten are revealed. Errors get themselves resolved some way. Probably more than anything else which leaves an impression is that collecting was carried on, in large part, as casually and spasmodically as the school teacher abroad gathers together her impedimenta of souvenirs.

In an incomplete list of names taken from Lea's "Observations" are those of thirteen doctors, only four of whom appear to have been collectors in the strict sense. The others pocketed a few shells as the things met their eyes, and by avenues more or less devious these shells reached Isaac Lea. This is probably why so many of Lea's types are "dead" specimens. The doctor of that day, if he lived west of the eastern seaboard or in the south, was compelled to go about on horseback. He was compelled, too, to hunt for fords, to halt at ferries, to wait with such patience as he had while floods subsided and permitted the resumption of travel. Such

occasions were opportunities whose final results were publication at Philadelphia. Nine of the list were geologists whose duties were broad, and might range from compiling zoological catalogues to recommending sites for mill dams. To the names of two men, the "Esq." is attached. One was of the Darien district of eastern Georgia and the other of northern Alabama, and I suppose that the "esq." in the cases indicated that both were what were known as "gentlemen planters", a designation that Jefferson Davis bore at a period of his life. Three Union army officers found time amid the stresses of the Civil War to send mollusks from their stations. One was in the dust and smoke of Sherman's March to the Sea. Another barely escaped capture during an enveloping maneuver. The Rev. George White, who collected from northern Alabama to middle western Georgia, I take to have been a circuit rider, and if Bishop Elliott could not be called that, he at least journeyed about as a circuit rider did. President Joseph Estabrook had a touch of picturesqueness. He was born in New Hampshire and died in Anderson County, Tennessee. It is written of him that "he was given to elegant ruffles and fine boots, to the prodigious use of snuff, to shooting even on Fast-day and, capping all, to dreams which told him faithfully how to win \$5,000 by lottery". Retiring from the presidency of East Tennessee University at Knoxville, he undertook to bore into the earth till he obtained salt. Death ended the enterprise before all his savings had been poured into the hole.

Flowing from the Cumberland Plateau in East Tennessee are two neighboring streams, Daddy's and Mammy's creeks. The old east and west road across the plateau dips steeply into a hollow of an inner fold of Walden Ridge, and in this hollow runs Mammy's Creek. I climbed afoot from Rockwood in the rain several years ago to visit the spot because the creek is the type stream of Lea's *Melania rufa*, later changed to *rufescens*. There was to be no consolation for the rain and mud. The creek was polluted with mine waste. But I am as certain as a person may be in the circumstances that this was the exact type locality. It was the only crossing

made by a main road. It was such a place at which a driver would stop, water and rest his beasts and prepare against the climb up the ascent, as abrupt one way as it was the other. And here a traveler would drop from the stage to ease his legs, peer into the clear, shallow water and bring away a few mollusks which ultimately would come to Dr. Lea. Incidentally, it may be told that the name of the stream provides a measure of the literary politeness of 1841. The Mammy's Creek of the natives became Mamma's Creek in the Philosophical Society Proceedings.

The English term "watering place" that flourished for many seasons in America and finally gave way to "resort" once had a southern analogue, "retreat". Perhaps this marks an ecclesiastical influence. But in another sense the use of the word was military. For the "retreat" often was fled to as a refuge from the yellow fever of the lowlands. An early geological report of Tennessee gives several pages to describing the cool airs, the abundant brooks and freedom from disease of mountain "retreats" of that state. A lingering establishment of the kind, sprawling over a mountain top and nearly collapsing from decay, sheltered me once while typhoid ran its course, and though it could have served as a symbol of poverty it was steadfast to a tradition of hospitality and kindness. In such a place in the old days, there was naturally a great amount of leisure. Guests strolled around, and strolling they saw snail shells, maybe for the first time in their lives. The shells, by ones and twos and little packets, reached describing naturalists and became blessed binomially, some less deservingly so than others.

A northern "watering place" was Yellow Springs, Ohio. A spring gushes here from a hillside in sufficient quantity to make a good-sized stream. The place was popular with people of Cincinnati, and thither went Thomas G. Lea, brother of Isaac, who had promised he "would look after the shells of his vicinity" when he moved west. He did it so well at Yellow Springs that he sent back lots in which Isaac found two forms he announced as new. Also, Thomas roamed afield and in Buck Creek, fifteen or so miles from

the springs, he took the clam we know now as *Anodontoïdes ferussacianus buchanaensis* Lea. A footnote on Buck Creek is in Ortmann's "Monograph of the Naiades of Pennsylvania", reading, "Location unknown. Possibly near Cincinnati?" The location is given correctly on the cover of Number 8 of Conrad's "Monography of the Family Unionidae", and it seems likely that in Ortmann's copy of this work the covers had been discarded.

All sorts of possibilities develop out of the attempt to follow the course of Conrad in his journey to Claiborne and back. His intention to go south was announced upon the cover of Number 2 of Volume I of "Fossil Shells of the Tertiary Formations of North America", bearing date of December, 1832. The "New Fresh Water Shells of the United States", introduction and text, provides hazy clues to the route and the excursions in Alabama. There is further light among the descriptions in the monograph on the Unios. Other information I owe to Mr. T. H. Aldrich and to various volumes of history.

Conrad was on the James River in Virginia in March, 1833. There was then no railroad running south out of Philadelphia and the railroad between Baltimore and Washington was not opened until 1835. When John Quincy Adams went home to Massachusetts in 1825, he travelled by coach to Annapolis, crossed Chesapeake Bay by steamer, by coach again to Newcastle, Delaware, and up the bay and river to Philadelphia by steamer; time twenty-four hours. It is reasonable to suppose that Conrad reversed this journey on his own trip eight years later. After getting to the James River and to Petersburg by stage, it was possible for Conrad to go on to the Roanoke River by rail. Audubon was on this railroad in 1833, and found that passengers could not give much attention to scenery since they had to devote themselves to putting out the sparks the flew upon their clothes from the locomotive. By stage or horseback, Conrad reached Charleston. Here a railroad, in course of building to the Savannah River opposite Augusta, Georgia, could be used for seventy-two miles. This line had the first Ameri-

can constructed locomotive, an engine that exploded because its attendant disliked the sound of escaping steam and tied down the safety valve. Conrad, as he himself sets down, collected around Augusta. Thereafter, he had to use stage or horseback to his destination at Claiborne. He took opportunity to peek into the Oconee, Ocmulgee and Flint rivers of Georgia. The stay in Claiborne was for six months. Excursion was made to Mobile and again to the Tombeckbe River (now Tombigbee) at St. Stephens, an old capital of Alabama that has ceased to exist as a community. He visited Wilcox County, where his host in Monroe County had a plantation. By the evidence of his descriptions, Conrad was on the Black Warrior River in Green County at Erie, a village that either has disappeared or changed its name, for it is not to be found on present-day maps or in gazetteers. How he got there is not mentioned, but thanks are paid to one Dr. Robert Withers of Greene County, probably for hospitality.

Mr. Aldrich has given me Conrad's route home. It was "Claiborne on the Alabama River to Selma by boat. From Selma to Elyton (now Birmingham) by stage. Thence across the upper reaches of the Black Warrior River to Huntsville. I don't know the route from Huntsville, but presume it cut across the eastern part of the state of Tennessee to Bristol; then to Lynchburg, Washington, Baltimore and Philadelphia". About thirty miles north of Elyton was Blount's Springs (since contracted to Blount Springs). He collected near here, apparently staying for a day or two. He took naiades in the Black Warrior by prodding a sharpened stick between their gaping hinges where they lay in six to eight feet of water. Beyond Blount's Springs, Conrad collected in and on the banks of Flint River, reduced now to Flint Creek. In this same district, he assigned to the Tennessee system a tributary stream that belonged to the Black Warrior just as Lea, upon another occasion, gave to the Tennessee system a creek that belonged to the Cumberland. So far, Conrad kept to the main roads. But the "New Fresh Water Shells" shows that he swung

westward as far as Tuscumbia, touching Florence, Muscle Shoals and Elk River. This digression was made easily possible by a new railroad, whose cars were drawn by horse, that joined the navigable water of the Tennessee above the shoals with that below them. It is curious that no hint of this part of the journey is given beyond Elk River "near its junction with the Tennessee". One may guess that the newer stage drivers did not linger at fords long enough to permit Conrad to stuff his pockets with shells.

In 1853, John G. Anthony, then a citizen of Cincinnati, walked through Kentucky, Tennessee and Georgia as far as Macon, "with the double purpose of renovating health, and of collecting the numerous and varied species of fluviatile shells with which our Western streams and rivers abound". Home again, he described fifty melanians, twenty-one of which were placed within the area of his journey. He "regretted his inability to give a more precise statement of habitat" than the names of states because the precautions he "had taken for keeping his collections distinct proved insufficient". Of the twenty-nine other melanians, twenty-two were assigned to Alabama, four to Ohio, one to Ohio doubtfully, one to Indiana and one to locality unknown. Unhappily, such precautions as were taken in which Mr. Anthony put trust were themselves insufficient. Walking, he could not have carried many specimens. Means of carriage for them were doubtless very inconvenient at times. The material just would get mixed. One comes to picturing him as taking up a shell and saying to himself, "Now, where did I get that?" The answer to the question was several times wrong. For example, five species that quite certainly were taken in Kentucky within the Green River drainage were written down as from Tennessee. In one case wherein Anthony broke his rule of keeping locality names confined to states and confidently assigned the species to a Tennessee creek he specified the wrong stream. Nor did confusion halt here. Mr. Anthony got the shells of his travels mixed with those from elsewhere. Three species that were credited to Alabama belonged by rights to Tennessee; one whose loca-

